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[54] Title: DETERGENT COMPOSITION

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[57] A B S T R A C T

A detergent composition in semi-solid form containing at least a non-soap detergent active, a detergency builder and a fabric softening clay. Higher levels of fabric softening clay can be incorporated in semi-solid product forms than in solid bar forms.

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DETERGENT COMPOSITIONS

ABSTRACT

A detergent composition in semi-solid form containing at least a non-soap detergent active, a detergency builder and a fabric softening clay. Higher levels of fabric softening clay can be incorporated in semi-solid product forms than in solid bar forms.

This invention relates to detergent compositions which are in a semi-solid form, that is to say a gel, cream or paste. Such a detergent form is already marketed in some countries. It is sufficiently solid that it cannot be poured, and it coheres together in a mass which can however be deformed by hand. Such a form is thus distinct from mobile liquids, powders and bars.

Semi-solid detergent compositions may be used for washing fabrics, and will then generally contain detergent active and detergent builder materials together with optional components, for example abrasives, fillers, perfumes and alkaline salts, such as silicates.

For use on washing fabrics, a semi-solid composition may be rubbed directly onto the fabric.

The use of clay in detergent compositions as a fabric softening agent is known, e.g. from UK 1,400,998. The use of softening clay in non-soap detergent laundry bars is disclosed in UK 2160886 (Firmenich).

With such laundry bars, however, it is impractical to include clay as more than about 5% by weight of the composition.

We have now found that softening clays can be successfully incorporated in semi-solid built detergent compositions.

According to the present invention there is provided a detergent composition of semi-solid form containing at least:

non-soap detergent active, preferably in an amount which is 10 to 45% by weight of the composition.

10 detergency builder, preferably in an amount which is 5 to 60% by weight of the composition, softening clay, preferably in an amount which is 5 to 40% by weight of the composition.

The clay may be an expandable smectite-type clay. Smectite clays are set out in UK 1,400,898 where they are specified as expandable, three-layer smectite-type clays having an ion exchange capacity of 50 meq/100 gram. They are expandable by swelling on contact with water. Examples of such clays are montmorillonite, volchonskite, nontronite, hectorite, saponite and saudonite.

The amount of clay may well exceed 10% or even 15% by weight of the composition, e.g. an amount which is 10-25% by weight of the

composition.

The stability of a semi-solid composition can be enhanced by adding a structuring agent, and it may be preferred to include a structuring agent as from 0.5 to 15% by weight of compositions according to this invention.

Conventional structuring agents are coconut ethanolamide (CEA), gelatin, starch, aluminosilicate and sodium carboxy methyl cellulose which also functions as an antiredeposition agent. These structuring agents may be used in combination with electrolytes.

Detergent actives and builder components are well characterised in detergent bar technology. The components are described in "Surface Active Agents" by Schwartz and Perry (Interscience 1949) and Volume II by Schwartz, Perry and Berch (Interscience 1958). The detergent actives usable in the present invention may be found in the general classes of anionic, nonionic, amphoteric, betaine and zwitterionic actives. Specific examples of detergent actives are linear alkyl benzene sulphonates, alkene sulphonates, secondary alcohol sulphates, branched alkyl benzene sulphonates, alkyl sulphates, alkyl ether

sulphates, olefin sulphonates, monocarboxylic acid salts, ethoxylated alcohols and fatty acid ester sulphonates. Linear or branched alkyl benzene sulphonates having 8 to 16 carbon atoms in the alkyl chain may in particular be used, possibly in admixture with other detergent active(s).

Examples of builder components are: water soluble phosphate salts, e.g. sodium tripolyphosphate, pyrophosphate and orthophosphate; water soluble carbonates, e.g. sodium carbonate; organic builders which may be polycarboxylate sequestrant builders, e.g. sodium nitrilotriacetate, sodium tartrate, trisodium carboxymethyl oxysuccinate, sodium oxydisuccinate and sodium sulphonated long-chain ~~mono~~carboxylic acids.

Other ingredients, for example silicates e.g. sodium alkaline silicate, starch, sodium carboxymethyl cellulose or other antiredeposition agent, polycarboxylate such as polyacrylate or acrylic/maleic copolymer, colouring materials, enzymes, fluorescers, opacifiers, germicides, perfumes, bleaching agents and fillers, for example sodium sulphate, talc, and calcite are optionally present.

Alkanolamines may be included, as described

in our UK published application 2194452A.

Production

A semi-solid detergent composition can be produced by adding the constituents to the water which will be present in the eventual composition, 5 and mixing.

A suitable procedure is to heat all the water, and dissolve in it the builder, any other solid electrolyte and sodium carboxymethyl cellulose (if used) while mixing under conditions 10 of high shear. When these components have dissolved, alkaline silicate (if any) is added, followed by detergent active, alkanolamine (if any) and clay. If a structurant such as coconut 15 ethanolamide is used, it is preferably added after the detergent active and alkanolamine.

Examples

In the Examples which follow, all percentages are by weight of the composition.

Detergent creams were prepared by the 20 production route given above. Their formulations are set out in the following table:-

	example No.	A	B	C	D	E
	Components					
1.	C ₁₂ -C ₁₆ branched ABS	15.0	30.0			
2.	C ₁₂ branched ABS			27.0		
3.	C ₁₂ linear ABS				28.0	26.0
	Sodium tripoly-					
	phosphate	25.0	15.0	15.0	15.0	9.0
	Alkaline silicate	1.5	1.5			2.0
	Neutral silicate			2.0	2.0	
10.	Coconut ethanolamide				4.0	
	Sodium carbonate				10.0	10.0
	Sodium sulphate	3.5	3.5			
	Sodium carboxymethyl					
	cellulose	1.0		1.5	1.0	1.0
15.	Smectite clay	10.0	20.0	15.0	20.0	15.0
	Starch					2.0
	Fluorescer, perfume	-----	-----	below 0.5%	-----	-----
	Water	-----	-----	-----	-----	-----
	C ₁₂ branched ABS was alkyl benzene sulphonate with					
20.	principally C ₁₂ branched alkyl groups,					
	C ₁₂ , C ₁₆ branched ABS was alkyl benzene sulphonate					
	with substantial properties of C ₁₂ and C ₁₆					
	branched alkyl groups,					
	C ₁₂ linear ABS was alkyl benzene sulphonate with					
25.	principally C ₁₂ linear alkyl groups.					

The clay was Volclay SPV 200NF from American Colloid Co, Skokie, Illinois.

Each of the creams had the appearance of a stiff paste, and had an acceptable non-gritty feel.

A trial of one cream (Example IV) was carried out as follows:-

Terry towel cotton squares were repeatedly machine washed without any softening agent, to give them a harsh feel. Half of the squares were then washed by hand, directly applying the cream to them. The remaining squares were washed with a control cream in which the clay was replaced with inert filler (sodium sulphate). The washed squares then assessed for softness of tactile feel by a group of panellists. 90% of the panellists unequivocally chose the squares washed with the clay-containing cream as softer fabric than those washed with the control cream.

(claims)

1. A detergent composition of semi-solid form comprising:

30 to 45% by weight of anionic detergent additive;

5 to 60% by weight of detergency builder;

5 to 40% by weight of softening clay.

2. A detergent composition as claimed in claim 1 wherein the composition comprises 10 to 25% by weight of the clay.

3. A detergent composition as claimed in claim 1 wherein the composition comprises from 0.5 to 15% by weight of a structuring agent.

4. A detergent composition as claimed in claim 2 wherein the composition comprises from 0.5 to 15% by weight of a structuring agent.

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